8. Recommendations

The study developed recommendations for project priorities based on their anticipated contribution to the long-term effectiveness of the regional system. Recommendations from the Northwest Area Transportation Study will be considered and analyzed further as appropriate in the MAG Regional Transportation Plan (RTP). Potential projects identified and modeled were reviewed and ranked in terms of their contributions and benefits to improving the overall system.

Measures used for the assessment and ranking and the resulting modeled figures are listed in Table 34. The criteria place an emphasis on projects that carry major volumes of regional traffic, close critical gaps, or offer alternatives to single occupant travel in heavily congested corridors.

The list of key projects is further divided into three levels based on funding availability, support from the community, and timing. Some projects may be very important in the long term context of the RTP but may not be critical until a later date because they address program elements for which congestion or impacts are not anticipated until further growth occurs.

While there is no single interpretation about the relationship between need and cost, the type of project also offers suggestions for funding. For example, arterials in developing areas that serve new growth exclusively are likely to be funded largely from development contributions. Projects that take place on regional facilities in fully urbanized areas are more likely to qualify for regional funds.

8.1 Priority Projects

As a starting point, all key projects are discussed in terms of their performance within their functional categories. The roadway categories include freeways, expressways/superstreets and arterial roadway corridors. Expansion could take the shape of a simple roadway widening to the preservation of the corridor for future freeway construction. The transit categories include light rail/bus rapid transit, commuter rail and fixed route bus service. Bicycle/pedestrian projects cannot be measured by the same yardstick, but have been shown in all phases under the “options” category.

Alignments and other major design elements for new freeways, highways, and arterials are subject to change following the completion of needed location/design concept studies. Local plans affecting the arterial system are subject to change, particularly in rapidly-growing areas.

8.1.1 Freeways

Based on existing traffic volumes and future demand projections, freeways carry by far the largest number of vehicle trips. In this list, emphasis has been placed on those projects that have an immediate need and are likely to be justified in terms of cost. In general, the regional policy is also to acquire sufficient right-of-way to accommodate all lanes required on all freeways, including HOV lanes, but that HOV lanes should be built only when they are justified by demand.

Table 34: NWATS 2020 and 2030 Network Comparison

Measure	2000	2020				2030			
		Future Base	Enhanced	New Corridors (A)	New Corridors (C)	Future Base	Enhanced	New Corridors (A)	New Corridors (C)
Centerline Miles									
FREEWAY	114	135	140	178	196	135	140	178	196
HOV	22	27	97	91	97	27	97	91	97
STREET	993	1,643	1,643	1,643	1,643	1,643	1,643	1,643	1,643
TOTAL	1,155	1,809	1,879	1,912	1,937	1,809	1,879	1,912	1,937
Lane Miles									
FREEWAY	567	710	1,063	1,655	1,630	710	1,063	1,655	1,630
HOV	545	54	215	194	217	54	215	194	217
STREET	3,146	7,197	7,348	7,245	7,245	7,197	7,348	7,245	7,245
TOTAL	3,859	7,919	8,626	9,094	9,092	7,919	8,626	9,094	9,092
Daily VMT									
FREEWAY	9,200,000	14,900,000	19,000,000	25,000,000	22,700,000	14,800,000	21,600,000	29,900,000	29,400,000
HOV	370,000	800,000	1,900,000	2,100,000	1,500,000	1,000,000	3,000,000	2,000,000	2,400,000
STREET	11,400,000	29,900,000	27,500,000	22,100,000	23,000,000	43,800,000	41,300,000	33,400,000	34,400,000
TOTAL	21,000,000	45,600,000	48,400,000	49,500,000	47,200,000	60,000,000	66,000,000	66,400,000	66,200,000
LOS (number of intersections)									
D	77	117	120	131	114	75	81	90	93
E and F	72	263	217	126	159	456	409	261	291
% congested	31%	52%	48%	46%	45%	62%	55%	41%	43%
Congested Lane Miles									
FREEWAY	42	202	119.81	46.77	75.8	317	306	184	217
HOV	--	23.8	12.3	1	8.8	33	75	21	29
STREET	222	1,052	556	263	356	2,414	1,851	832	937
% congested	7%	16%	8%	3%	5%	35%	26%	11%	13%
Hours of Delay									
FREEWAY	47,043	322,000	176,300	58,792	99,099	1,153,623	584,933	231,862	288,490
HOV		14,000	4,474	213	3,129	61,286	40,414	13,133	13,542
STREET	110,850	630,600	325,389	166,091	203,707	3,790,770	1,604,885	515,314	615,140
Average Speed									
FREEWAY	57	40	47	55	53	21	35	49	45
HOV	60	57	60	61	60	41	56	51	58
STREET	29	26	29	29	29	16	23	28	26

Freeway projects are recommended for:

<u>I-10</u>

Future demand is so high that a parallel facility, referred to as the "I-10 Reliever", to be located south of I-10 and extending between I-17 and SR 85, is being considered to expand the corridor capacity[9]. The I-10 Reliever is projected in the SW Study to also

[9] An I-10 Reliever roadway is proposed in the Southwest Area Transportation Study and the HCTS recommends evaluation of LRT/BRT along the I-10 Corridor. Designs for I-10 improvements should consider these needs.

carry over 300 thousand vehicles per day in some places, bringing the total volume carried by I-10 and the Reliever to over 600 thousand vehicles per day. On the other hand, I-10 has substantial space still available within its existing right-of-way that will permit the construction of additional lanes and possibly the inclusion of a high capacity transit line such as LRT or BRT. With some modifications near structures along the route, the benefit to be gained from work on I-10 by widening its lane capacity from its current directional 3 (west of Loop 101) or 3/4 (east of Loop 101) to 4 and 5, respectively, can be significant. ADOT is undertaking an I-10 Corridor Profile Study that will help define the opportunities and challenges within the corridor and the best way to accommodate the various competing demands for additional lanes and transit facilities.

West of the CANAMEX corridor, I-10 projected volumes for 2020 and 2030 (<30,000) do not identify it as a critical need compared to other parts of the corridor. It currently has the capacity to meet transportation needs into the foreseeable future.

In conjunction with added lanes, the addition of one more HOV lane along the entire length from I-17 to SR 85 could require more extensive modifications to the existing configuration. The further inclusion of an LRT line (an alternative specified in the MAG High Capacity Transit Study), even as a replacement for one HOV lane, could open the need for additional right-of-way. The provision of added HOV facilities as part of the roadway improvements to make alternative mode travel possible such BRT or express bus should occur at the same time as the added general purpose lanes.

From a timing perspective, the need is greatest east of Loop 101 for both general purpose and HOV lanes. The heaviest congestion occurs in this reach and is the greatest concern among motorists. Because the demand is still developing west of Loop 101, those improvements are appropriately delayed to a midterm phase of construction or added over a longer period of time. Under any scenario, given the anticipated demand, there will need to be a thorough evaluation of the I-10 Corridor before the final configuration of the freeway and the reliever can be understood.

Given the need for capacity in this corridor and its favorable condition to accommodate at least some of that demand, this is a very important choice in serving the Northwest and Southwest Valleys.

I-17[10]

As configured, the I-17 corridor is contained within a very tight right-of-way south of Loop 101. Any work in that area will be costly. While this freeway carries a very high volume of traffic, major improvements south of Peoria Avenue are probably too costly to qualify for early funding without major impact to the overall regional transportation plan. In the NWATS, a single additional general purpose lane is proposed to be added north of Peoria Avenue, consistent with the current LRTP. The MAG Bottleneck Study has identified possible options for the I-17 Corridor that range from widening the existing freeway to double-decking the freeway south of Loop 101. The final configuration will require substantial additional analysis. For purposes of determining a cost figure, $1 billion was used to reflect the high cost without a specific project.

[10] ADOT I-17 DCR/EA recommendations, including frontage roads, are included by reference.

North of Loop 101, growth will demand substantially more than the two lanes (each way) currently available. The proposal to add three additional lanes in each direction as far as Loop 303 and four lanes each way beyond that to New River can be phased in as development takes place and funding becomes available. While some immediate relief is needed, this is mostly a mid-term to long term project that will be timed to serve the demand as it rises. An HOV lane north of Loop 101 to New River should also be included in any mid-term project to widen the I-17 Freeway to establish the alternative mode corridor as the area grows.

Loop 101[11]

The project identified in the NWATS for Loop 101 is the addition of a new general purpose lane (for a total of 4 each way) and one HOV lane each way. These improvements help to address the most congested part of the Northwest Valley. As growth continues, the level of service on the arterial system in the area bounded by Loop 101, I-10 and I-17 deteriorates substantially until capacity is added along the boundary corridors. Loop 101 is a relatively new facility, but one that will be called upon to mitigate some of the limitations of the rest of the system in the area. It will become overloaded in the near future (volumes well in excess of 200K per day) without additional capacity. This roadway also is and will be a main access to a variety of activity centers extant or under development in the Northwest Valley (e.g., Arrowhead retail district, Coyotes/Cardinals sport facilities and related improvements, etc.) that will demand improved linkages to the entire Valley.

Loop 101 general purpose lane construction should be a near term project. Because of its lower volume projections and high cost, the HOV lanes can be deferred to mid term if funding so requires, but they are best delivered at the same time.

Loop 303[12]

There are three main parts to Loop 303 in the NW study area: south of US 60 (Grand Avenue), north of US 60, and the New River Extension that connects to I-17 near New River. Thirty years from now, the section connecting to I-17 near Lone Mountain Road and the section connecting to I-10 near Cotton Lane will carry heavy volumes of vehicles (up to 250 thousand per day, each.) The Extension to New River will carry less (about 130 thousand per day). The volumes clearly identify a need for all segments of Loop 303 in the study area to be built ultimately to freeway standards. Each section of Loop 303 may however be constructed to expressway or parkway standards initially, with sufficient right of way obtained in the near-term for an ultimate freeway facility, and only upgraded to freeway standards later as demand warrants and funding is available.

The segment south of US 60 is the most critical section of Loop 303 given the demand it serves. On the basis of demand alone, it qualifies as a midterm project. Much of the right-of-way is already in hand and a substantial amount of the preliminary engineering work has been completed or is underway. This will simplify the process of building the project and it could offer significant benefits to the area if funding is available in the near term.

While the segment north of US 60 does not attract as much traffic in the near term, it is

[11] The recommendations of the ADOT Design Concept Reports for I-17 and Loops 101 and 303 are incorporated by reference.

[12] Ibid.

important to protect rights-of-way as development fills in within its vicinity. Where it is yet to be acquired, right-of-way protection should be a near term project for all of Loop 303. The segment from Grand Avenue to Lone Mountain Road is a midterm project, though an interim arterial level project is underway today between Grand Avenue and Lake Pleasant Road. Construction of the New River Extension as a freeway is a long term project. In keeping with the regional HOV policy on freeways, the Loop 303 freeway will also include an HOV lane. Based on anticipated volumes, it will not be needed until the long term, but must be accommodated in the design and right-of-way acquisition programs for the facility.

In all cases, there will have to be close attention paid to mitigation of local impacts as the various phases are constructed. Sound attenuation is expected to be a component of all freeway projects in the future (e.g., noise walls, rubberized asphalt, etc.) and cost estimates will have to account for those elements as a matter of course. The estimates used here include a minor accommodation for environmental mitigation, but will need to be reviewed in some detail at the time of actual design.

8.1.2 New and Reconstructed Interchanges

The improvement to the freeway system includes new interchanges, modifications to existing interchanges, and an HOV direct connection. The locations are also shown in Figures 66, 67, 68, and 69.

New interchanges are proposed on I-10 at the CANAMEX Corridor (in the vicinity of 355th Avenue pending a final alignment to be further defined in a future ADOT study) and Wilson Road west of the White Tank Mountains.

Other interchanges on I-10 are to be located at Bullard, Perryville Roads and El Mirage / Dysart Roads to improve access in the east of the White Tanks. A potential I-10 / El Mirage interchange and/or crossing will be the subject of further study as part of an El Mirage/Dysart arterial roadway corridor analysis. The El Mirage location is difficult to manage operationally and financially on the north side of the freeway because of proximity to adjacent interchanges, impact on local neighborhoods and a major Agua Fria River crossing.

I-10 will include a system interchange at the new Loop 303 that will also need to address access to Cotton Lane and Sarival Road.

A system HOV Connector system is proposed for I-10 at Loop 101 and an additional HOV interchange at 59th Avenue as well as completion of a full HOV interchange at 79th Avenue.

An I-10 Corridor Profile Study is currently underway by ADOT that may identify additional needs or help to refine results from this study and the RTP.

Improvements to I-17 are not yet fully defined south of Peoria Avenue, but new interchanges have been identified for Dove Valley Road and Jomax Road in North Phoenix. A system interchange at I-17 and Loop 303 near Lone Mountain Road will be part of the new freeway program for Loop 303 (including a half interchange at Dixileta/I-17 and a full interchange at 43rd Avenue/Loop 303) as well as a system interchange at I-17 and New River as part of the New River Extension.

I-17 will add an HOV Connector at Loop 101 and HOV ramps near Peoria to improve HOV circulation in the corridor and better serve the

MetroCenter park-and-ride facility. In addition to the HOV Connectors at I-10 and I-17, Loop 101 will provide HOV ramps at Maryland Road and 59th Avenue and a full interchange at Bethany Home Road.

Lastly, Loop 303 will provide access at appropriately spaced locations along the entire 33 mile route to intersecting arterials. When built, Loop 303 will also furnish system interchanges at the New River Extension and at Carefree Highway to accommodate potential new freeways in those corridors.

8.1.3 Freeway Operational Improvements

The ADOT Freeway Management System (FMS) employs many of the Intelligent Transportation System (ITS) technologies. The system includes fiber optic communications, ramp metering, CCTV cameras, vehicle detectors, and variable message signs. There are 90 miles of freeway currently in operation in the Northwest Valley. ADOT has made a commitment to ITS and maintaining the FMS and will continue to add ITS features to the existing system. New sections of freeway will be designed and constructed with the ITS elements included. ADOT estimates the cost for these facilities on the freeway system to be $1 million per mile. Applying this estimate, it would cost $156 million to provide FMS/ITS features on the 156 miles of existing, potential, and programmed freeways within the study area.

The traffic signal systems and coordination in the Northwest Valley are operated independently by each city. With the exception of Phoenix and Glendale, there are no centralized signal control systems in the area. However, Glendale, Peoria and Surprise are planning to implement such systems in the near future. This will lead to greater fragmentation which limits the opportunities for area wide implementation of signal coordination in the near future. Consistent with the MAG ITS Strategic Plan, Phoenix, Peoria, Surprise, and Glendale are part of the regional ITS program that encourages signal coordination across jurisdictional boundaries. These agencies will soon have the ability to provide traffic-related information to other neighboring cities and the State for incident identification/response and the prospect of interjurisdictional coordination of signals.

Another freeway operational feature that is currently in use is the Freeway Service Patrol. It is a cooperative effort among Department of Public Safety (DPS), Arizona Automobile Association (AAA), MAG, and ADOT. Trained personnel use specially equipped vehicles to assist stranded motorists and remove road hazards. The service is available 18 hours a day, 7 days a week. This service is currently programmed through fiscal year 2007. As freeways volumes grow and become more congested, it will be important to continue and expand this service.

8.1.4 Freeway Maintenance

In order to maintain the integrity of the freeway system, the facilities need to be maintained to acceptable service conditions. Freeway maintenance includes provide a satisfactory riding surface for the traveling public. The roadway surface should be kept relatively clean with minimal cracking and rutting. If the surface is maintained, the frequency of reconstruction can be minimized.

The term maintenance also includes litter control, service patrols, and landscape maintenance, including restoration.

8.1.5 Expressways / Superstreets / Parkways / Arterial Roadway Corridors (ARC)

There is a lack of capacity within the arterial system in the Northwest Valley as a result of system discontinuities in a number of areas. Enhanced roadways that can carry greater volumes than roadways within the typical arterial hierarchy can help mitigate against grid breakdowns that occur at major developments or institutions (e.g., Sun City, Luke AFB.)

For planning purposes, new expressways are considered to have partial access control and to be upgradeable to freeway standards when demand warrants and funding becomes available. Parkways are similar in terms of immediate capacity but may have additional landscaping and beautification, and may or may not be upgradeable to full freeway standards. Super-streets are enhanced arterials. The regional model does not have categories for parkways or super-streets, so these facilities were typically modeled as expressways for this analysis.

The term "arterial roadway corridor" (ARC) refers to minimum four-lane facilities that operate as controlled access roadways, enhanced arterials (in the urban area), or possibly parkways, expressways or even standard arterials depending on future demand. In each case, an arterial roadway corridor will require a more detailed assessment to determine the exact location and configuration of the facility and may need to be treated as a multi-facility corridor in some cases.

Arterials generally provide local and not regional service. There are exceptions, however, where major regional movements rely on arterials because of limited or nonexistent alternatives. Some of these exist in the Northwest Valley and are identified in the ARC category.

Grand Avenue

Grand Avenue (US 60) is a longstanding element of the roadway system that has defined travel in the Northwest Valley. It is relied upon for access to most cities in the area and continues to provide a "shortcut" to areas northwest of the urban core. Its orientation is a benefit as well as a challenge because it does not conform to the grid pattern of the subregion. On the other hand, it is the main non freeway component of the roadway system and a will remain a critical part of the future transportation network.

The most traveled portion of Grand Avenue is divided into two parts: between I-17 and Loop 101, and between Loop 101 to Loop 303. Two recent studies have evaluated the needs in the corridor and identified the projects required to improve the capacity of Grand Avenue to handle substantially greater traffic volumes (up to 82k.) The Major Investment Study (MIS) completed in 1999 addressed the segment south of Loop 101. This segment is proposed to be a limited expressway and contains a series of grade separations and street closures to expedite traffic flow through critical intersections. This work is programmed or under construction using existing funding sources. Other locations, though not yet identified in the current plan for the corridor, are also of interest to further improve flow (e.g., grade separations at Indian School and McDowell Roads.) This part of Grand Avenue is a near term project.

A new MIS (Phase II) is currently underway to further refine the corridor needs between I-17 and Loop 101. Right-of-way preservation is identified north of Loop 202 to SR 74. The entire Grand Avenue Corridor, from Van Buren to Wickenburg is identified as an ARC

and will call for varying degrees of access control and additional study, particularly in northerly areas leading away from the urbanized area. The recently completed Grand Avenue Northwest Study between Loops 101 and 303 recommended specific improvements (e.g., widening, grade separations) and classified the roadway as an "enhanced arterial/limited expressway."

This section of Grand will continue to serve both local and regional traffic. Major projects specified in the Grand Avenue NW study report include widening to six lanes, grade separations and the addition of ITS. At 45,000 to 65,000 vehicles a day, the 2030 traffic volume projections are still heavy, but not the volume of the section to the south east. On the other hand, it serves a rapidly growing area in Peoria and Surprise that is already heavily reliant on it and, despite improvements to Loop 101 and construction of Loop 303, will continue to be. The cost of $135 million is relatively modest compared to others. This qualifies as a near term project in the Northwest Valley.

North of Loop 303, protection of right-of-way and widening to four lanes will be necessary, but as a midterm or long term project depending on the pace of growth in the area.

For budgeting purposes, funding of $100 million was estimated for the mid-to-long term highway elements based on the analysis in the first Grand Avenue MIS completed in 1999 to address further needs in the corridor. It would cover additional bridges mentioned above and corridor beautification among other items.

Northern Avenue Superstreet (ARC)

The City of Glendale included a major roadway improvement along Northern Avenue among a long list of projects in their transportation sales tax election in November 2001. The exact concept for the Northern Avenue Superstreet is still under development and requires discussions with neighboring communities, but it has been modeled as an expressway that can support a very high volume of vehicles (about 80 to 90K per day.) Such a roadway or limited expressway can help to offset some of the traffic carrying limitations of the arterial grid and provide a major east-west connection between Grand Avenue and Loop 303. Working in concert with Grand Avenue east and south of their intersection, Northern Avenue greatly improves access to and from the central urban core area. This relieves congestion on parallel facilities and establishes a regional corridor where one does not currently exist. The project is relatively expensive at well over $200 million, but justifiable in light of the few options available in the area.

The Northern Superstreet is a midterm element of the program based on the need to further deliberate the configuration and regional cooperation elements of the project.

Carefree Expressway (ARC)

This project calls for right-of-way protection consistent with a freeway for the entire length of the roadway between I-17 and US 60[13]. In addition to future roadway widening, right-of-way preservation will also help to protect access and visual aesthetics along the scenic corridor. The segment that connects I-17 with the New River Extension of Loop 303 will serve anticipated growth in the North Phoenix area and provides a major east west connection to newly developing areas, but will remain a six-lane arterial. Though the volumes this corridor carries are significant,

[13] Consideration as a future freeway with a system interchange at Loop 303 is subject to further ADOT analysis. It will remain an arterial between I-17 and Loop 303.

they are not projected to materialize until late in the forecast time period. Right-of way protection (and the means to make such protection possible if not found in current zoning or planning regulations) should be a high priority as development proceeds, but the construction of the expressway is a long term project subject at least in part to funding from development interests that will benefit from its new capacity.

Loop 303/Loop 101 Connector (ARC)

The proximity of the two freeways, Loops 101 and 303, in northern Peoria presents a challenge or an opportunity. Based on model output, traffic is expected to travel between the two facilities in search of "short cuts." It can be facilitated or not facilitated. If not facilitated, the cut-through traffic that may occur is likely to lead to neighborhood impacts, as traffic seeking to transfer from one freeway to the other will end up using local streets. If the cut-through traffic is instead facilitated with an improved roadway that serves as a higher volume connection between Loops 101 and 303, there will be less potential impact to local neighborhoods.

The connection was modeled as an expressway, aligned along Lake Pleasant Road to Beardsley Road and connecting to Loop 101. A second expressway connection from Loop 303 along Happy Valley Road over to Lake Pleasant Road (which then connects to Beardsley / L101 as noted above) was also included. The combined connections attract a respectable volume (up to 75k, depending on the segment.) Because this project has potentially significant impacts on adjacent communities, it should be evaluated in detail as a regional connection very soon as a follow-on to other work to improve circulation in the general area (e.g., Loop 303.) The results of that analysis will dictate the viability of the facility and its priority. In the absence of other information, the numbers place construction of this project as part of a mid to long term plan. Right of way protection should take place as early as possible, however, as the area is already under development.

Sun Valley Parkway (ARC)

Located in the far Northwest Valley, Sun Valley Parkway will need to be expanded to a six-lane arterial highway to support a major growth program in the Town of Buckeye. The timing of the need for the project will depend directly on the pace of development. Though Sun Valley Parkway offers a loop type connection around the White Tank Mountains in conjunction with Bell Road, its primary purpose is related to development in the area according to modeling results. The Department of Transportation (ADOT) would also like to evaluate a connection of Sun Valley Parkway to SR 85, south of I-10, to create a major corridor linkage between the growing areas of the Southwest and Northwest Valleys.

Sun Valley Parkway should be recognized as a major corridor in the far West Valley and rights-of-way for a parkway/expressway should be protected as the opportunity arises (or memorialized in the Town's General Plan) to ensure availability of needed space in the future. It warrants six lanes, but can function as an arterial or parkway though it was modeled as an expressway. This is a long term project but could move more quickly if needed and funded by development.

CANAMEX Corridor (ARC)

The CANAMEX Corridor is modeled as an expressway between I-10 and US 93, but it attracts few trips by 2030 (in general, less than 2,500 per day). That demand and the demand projected for other vehicles in the corridor can be readily accommodated in a

four-lane roadway. CANAMEX is however, identified as a major future conveyor of truck traffic between Mexico and Canada and between states and regions within the U.S. Given the facility's significance in the regional and national long range transportation plans, it is recommended for preservation of rights-of-way consistent with a freeway.

The extent to which such traffic grows more rapidly than anticipated could dictate earlier timing for its implementation. In the interest of preserving the opportunity for its future construction and recognizing the expectation of development in Buckeye, the right-of-way preservation is justified before the need for the road. The right-of-way should be able to accommodate an expressway level roadway. CANAMEX is a long term project, but right-of-way acquisition/protection should occur within the near-term timeframe for already-owned public right-of-way and not later than mid-term for the remaining right-of-way.

Wickenburg Bypass (ARC)

The Town of Wickenburg has sought support for the bypass of its historic downtown. ADOT's cost estimate of the approximate 24-mile roadway is $220 million and in terms of traffic volume priority in the region, the project ranks low. With that in mind, the town has focused on gaining support for the westerly portion of the bypass that represents the northerly segment of the adopted alignment of the CANAMEX Corridor which connects to US 93 and, as such, a significant future regional facility. That segment, though still low in projected volume, is as a result identified as a higher priority than the easterly portion of the bypass. As indicated in the discussion above for the CANAMEX Corridor, right-of-way sufficient for an expressway should be protected near- or mid-term.

El Mirage/Dysart Parkway (ARC)

There are few continuous north/south arterials in the Northwest Valley. Most regional trips require a circuitous path along arterials to travel from northern Peoria or Surprise to I-10. Even the freeways will not cross the entire sub-region until the Northern Extension to Loop 303 is built in the future. El Mirage Road links or will link Carefree Highway with Grand Avenue. Dysart Road connects Bell Road with I-10 and points south. The locations of the Sun City developments and the City of El Mirage prevent either from being extended to serve the entire distance alone. However, connecting the two at an appropriate midpoint near the City of El Mirage as a six-lane arterial would offer a major north-south connection to the region. This is consistent with the Grand Avenue Northwest study's conclusion for a possible grade separation of El Mirage Road /Thompson Road at Grand Avenue, though the exact alignment of roadway will require further study to address possible Title VI issues and local impacts. This is a mid to long term project subject to funding availability and the required analysis. Right of way preservation as needed should occur in the near term.

Jomax/Happy Valley Parkway (ARC)

Bell Road is the major east west arterial that crosses the entire Northwest Valley. It is already heavily congested east of Surprise and has little potential for major capacity enhancements. The linking of Jomax and Happy Valley Roads near Loop 303 as a regional arterial can offer a major six-lane east west connector arterial in one of the region's most active growth areas. It will remain a major arterial east of 67th Avenue.

This alignment will to a substantial degree be part of development efforts and should follow the pace of development. It is identified as a

mid to long term project pending growth activity. In keeping with the arterial roadway corridor concept, the recommendation is to protect right of way sufficient to accommodate an expressway/parkway through the cities' General Plans and development processes.

8.1.6 Bridges

As part of the improvement of the existing arterial highway system, there are certain key river crossings that should be provided to ensure continuity of key routes in the Northwest Valley.

Within the easterly portion of the study area, a crossing of the New River at Beardsley Road, in combination with a partial freeway interchange was identified as a key improvement. The new connection would provide access for west/southbound traffic (Loop 101 turns from westbound to southbound at Beardsley Road) to and from Loop 101 and Beardsley Road. Access to the north/eastbound freeway would be available at a "Texas U-Turn" along the north side of the existing Union Hills Road/SR 101 interchange immediately south of the proposed partial interchange.

Peoria Avenue over the Agua Fria was considered critical to circulation in the communities of El Mirage, Youngtown and Peoria. It provides a connection that closes a large gap in the arterial system. The current configuration forces significant out-of direction travel to cross the river.

In the southern area of the study on the Agua Fria River, new bridges are recommended at Indian School Road and Thomas Roads and a widening of the bridge at McDowell Road. The Indian School Road bridge is deficient and will require replacement. Thomas Road is a major link that will be difficult to complete, but which offers a crossing in a location that will become congested as freeway volumes increase and development activity on the area continues. The McDowell Road bridge is in good condition, but, like Thomas will require more capacity to accommodate growing traffic demands in the area.

In the western NWATS area, the new corridor system will require a number of crossings of the Hassayampa River to accommodate the anticipated development activity in Buckeye that should be built into the cost of building the new corridor system. The exact location of the bridges will need to be evaluated as the area develops to ensure maximum utility for the new communities and good local support of the regional freeway system along I-10.

Similar cases will present themselves in the North Phoenix, Peoria and Surprise areas with projects such 67th Avenue over the CAP Canal which link new growth in those cities.

8.1.7 Other Roadway Items

There are policy matters that must also be taken into account in the future transportation plan. These are longstanding issues that will need to be addressed as regional solutions to the limitations of the arterial highway system. Funding has been identified as a generic cost to cover most of these system shortcomings.

<u>Safety and Intelligent Transportation Systems</u>

An assessment of the relative safety among the three planning scenarios was carried out as part of the study. This assessment clearly showed that the overall safety performance of the regional transportation system improved with additional freeway mileage in the system. However, in order to ensure that plan recommendations adequately address safety needs, and result in the safest possible transportation environment in the region, the following policies are recommended in the areas of safety and ITS:

Freeways

ITS: All future freeways and expressways are assumed to have full Freeway Management System (FMS) coverage. The capital cost of implementing FMS is estimated at $750,000 to $1,000,000 per mile. This essential feature in future freeways will have both capital and an on-going maintenance and operating cost component. The estimated operating and maintenance cost for FMS is about $ 20,000 per mile per year.

***Safety*:** All freeways and expressways with medians narrower that 75 feet should have concrete Jersey barriers, where practical, to prevent crossover crashes. For cost estimating purposes, it is assumed that half of all new freeway miles will occur in built up areas with limited right-of-way, hence narrower medians requiring barriers. Special consideration may be needed in some cases to provide for adequate median drainage, but the cost of implementing this is estimated at $ 300,000 per mile, not including costs required to mitigate drainage or other issues.

The Freeway Service Patrol service should be expanded to cover all new freeways, at a minimum, during peak periods. The annual cost of this service is estimated at $5000 per mile per year.

Arterials

ITS: All street traffic signals should be linked to centralized control systems at the local agency's Traffic Management Center. These systems should also be linked as possible to a region-wide system. All major arterials that carry heavy traffic flows should have full ITS coverage consisting of coordinated traffic signals, closed circuit television (CCTV) cameras, variable message boards, and street and freeway traffic information broadcast to in-vehicle devices. It is also anticipated that a funded strategy to clear traffic incidents and crashes on the arterial system will be in place. The allocated cost of developing these new features in the study area arterial system has been set at $100,000 per mile of new arterial.

Ideally, subject to legal limitations, these funds would be collected as part of the public agency capital improvement programs for construction of new roadways or as part of the development approval process and should be placed into a regional fund to implement ITS on a priority basis throughout the area.

Safety: All new arterials should incorporate features based on the best prevailing design practice for safe pedestrian and bicycle facilities. Recommendations in the MAG Pedestrian Design Guidelines, or its equivalent, should be considered at the time of implementation.

Arterial Grid Continuity

This is a policy item of high priority. The regional arterials discussed above and some of the expressways are designed to help mitigate the obstructions to expanding the arterial grid in portions of the highway system in the Northwest Valley. Though special projects have been defined for the existing limitations, a policy must be written and adopted to ensure roadway grid continuity in any future areas. This is a regional issue that needs to address the challenges of topography along with development concepts.

Scalloped Streets

The discontinuities that have resulted from the piecemeal construction of roadways along developing properties are also a key policy challenge. Scalloped streets should be addressed as a regional item as far as priority and possibly some funding, but they will continue to be a local responsibility regarding

implementation. This is particularly an issue with new road construction in unincorporated areas.

Preservation of Right-of-Way

To allow for the long term implementation of the Regional Transportation Plan roadway system, major facilities and key arterials must be protected from encroachment that prevents implementation of the plan. This has been addressed in some projects where the timely acquisition of the right-of-way may be more important than the actual construction of the project, but it should also be addressed as a policy item to prevent development or other projects from limiting long term options. An example is the northern segment of Loop 303 (north of US 60) where the need is a mid term project, but the right-of- way should be preserved as soon as possible to prevent encroachment and provide clear notice of the long term intent for the facility. Similar preservation issues may exist for many of the key arterials as well.

A regional funding allocation is proposed in each of the near, mid and long term listings to cover such costs from a regional source to prevent the loss of options in the arterial system. Another parallel policy option is for cities to adopt the larger facility designation (e.g., parkway or expressway) into their General Plans to establish the basis for legitimate development exactions at the appropriate time.

Avoid T-Intersections and Six-Legged Intersections

Where two major roadways, freeways in particular, connect across another, there should be single interchange. Offset interchanges create major circulation challenges and have a major impact on highway capacity. One example in the NWATS area is the possible future connection of SR 85 with Sun Valley Parkway across I-10. This connection will be subject to further assessment, but should there remain a four to five mile “disconnect” between the two primary north-south links through Buckeye, it will seriously impair the ability of I-10 to accommodate its normal traffic as it will also be required to handle all north south trips.

8.1.8 Transit Projects

There are substantial efforts underway to define an expanded transit system throughout the region. Projects under study include high capacity transit (i.e., light rail transit, bus rapid transit, commuter rail) as well as a major expansion of fixed route transit and paratransit services. The final determination of the proposed system elements will be largely defined by studies currently underway at MAG and RPTA, but recommendations in this report are presented based on preliminary information from the two studies to reflect a potential multimodal system. Each transit system element in the Northwest Valley is addressed individually using the preliminary results of the High Capacity Transit Study (HCTS) and the Regional Transit Systems Study (RTSS.) Final decision on recommendations including priorities and funding will be made as part of the MAG RTP process.

It should also be noted that because the modeling timeframe for the transit studies was 2040, as opposed to 2030 for the highway projections, the identified implementation periods for some high capacity transit projects have been adjusted to be more consistent with the highway implementation terms. Costs of some of the high capacity projects are likely to have an influence over how these projects are ultimately prioritized. The results here are shown as a means of addressing a first cut at a multimodal plan. In general, because of the long lead time and high cost of some transit projects, a near term HCTS project will be more compatible with a mid

term highway project though in the interest of indicating priority, they may be shown in the same stated time period.

High Capacity Transit

The High Capacity Transit Study (HCTS) has identified multiple corridors for possible deployment of light rail, bus rapid transit or commuter rail and a recommended three-level priority treatment. These are high cost projects designed to offer alternatives to the single occupant vehicle. In the HCTP, the priority was determined largely by ridership potential, linkages to the committed high capacity network and the cohesiveness of the overall network. Their priority may change in the RTP process, but for purposes of this report, the following HCTS projects are excerpted from regionwide recommendations for the Northwest area:

- BNSF – Downtown Phoenix to Loop 303 Commuter Rail/BRT. The Grand Avenue MIS Phase II will evaluate transit needs in greater detail and make recommendations for transit along Grand Avenue south of Loop 101.
- Glendale Avenue Extension LRT
- I-10 West Corridor LRT. This will require further coordination with ADOT in the I-10 Corridor as improvements are defined for that area.
- MetroCenter/I-17 LRT
- I -17 Corridor LRT/BRT
- 59th Avenue – Bell Road to I-10 West LRT/BRT
- Bell Road – I-17 to Loop 303 LRT/BRT

Fixed Route Transit

The results of the Regional Transit Systems Study will determine the manner in which priority is assigned in the regular bus route system. In the Northwest, the emphasis should be placed on helping to relieve congestion on the arterial highway network. Most of the fixed route demand will be in the most heavily urbanized portions of the study area and deployment should occur in the first two terms to maximize the benefit of the service in congested areas. Bus system expansion is relatively inexpensive and the recommendation is to deploy all identified service within the short and midterm portions of the program (subject to final results of the RTSS.)

8.1.9 Non-Motorized Projects

The estimated costs of the regional bicycle system expansion are proposed to be divided among the short, mid and long terms as a line item in each that must be considered in the development of the overall multimodal plan. The allocation of funds to specific projects should be justified by:

- extension of existing regional elements;
- new linkages of existing regional elements;
- new regional system elements; and
- agreement of multiple agencies.

Figure 60 shown previously depicts the recommendations for non-motorized, off-road projects. A thorough evaluation of these options is recommended to properly define the ultimate configuration of the system. (Note: Because the costs of on-street facilities are part of the underlying street infrastructure, they have not been identified separately as priority projects. Their absence should, however, not be taken to imply they carry reduced significance. They are and will be an integral part of the non-motorized system.)

8.1.10 Cost Estimates

Preliminary estimates are provided for all projects. These estimates are preliminary and subject to change in the final RTP. Contingency allowances have not been included in the estimates but are expected to

be included in the estimates developed for the RTP.

Capital Costs

Capital Costs were estimated in a manner consistent with the other subarea studies based on a project type average cost table (See table 35.) Where more detailed project specific estimates were available, they were used instead of the table. More refined information is being developed in the Regional Transportation Plan.

Operating Costs

The focus of the NWATS was on identification of the capital projects that would be considered in the development of the RTP. Costs associated with projects identified in this report are only for capital development. Annual costs will be deferred to the RTP as part of the region wide need to assess the implications of operations and maintenance funding on the future of the transportation system as a whole.

Summary of Draft Priority Categories

Table 36 on the following page and Figure 66 are summaries depicting total recommended projects. Cost tables and maps for each of the recommendations phases, i.e., short-, mid-, and long-term, are provided following Figure 66. Cost and phasing are subject to change in the RTP process.

Table 35: Capital Cost Assumptions

COST ITEM (cost per mile unless indicated)	CONSTRUCTION	RIGHT OF WAY	TOTAL
FREEWAY CONSTRUCTION			
New	25	15	40
Add 2 lanes	8		8
Add HOV lanes	6		6
New TI (ea.)	13	3	16
New system TI (ea.)	90	10	100
System HOV Connector (ea. TI)	35		35
TI reconstruction (ea.)	7		7
EXPRESSWAY/PARKWAY/ARTERIAL ROADWAY CORRIDOR (ARC)			0
Widen 2-4 lanes	3.5	1	4.5
Widen 2-6 lanes	5	1.5	6.5
ROW Preservation on New Corridor		7.5	7.5
ROW Preservation on Existing 4-Lane		3.5	3.5
ARTERIAL			0
New 4 lane	3	1	4
New 6 lane	4	1.5	5.5
Widen 4-6 lanes	3.5	1	4.5
ITS	0.1		0.1
TRANSIT			
High Capacity Corridors	From MAG High Capacity Transit Study		
Fixed Route and Paratransit	From Valley Metro Regional Transit Systems Study		
NON MOTORIZED			
Off Road Bikeway	0.5	0.2	0.7
Note: Actual cost estimates were used where they are available			

Table 36: Priority Summary

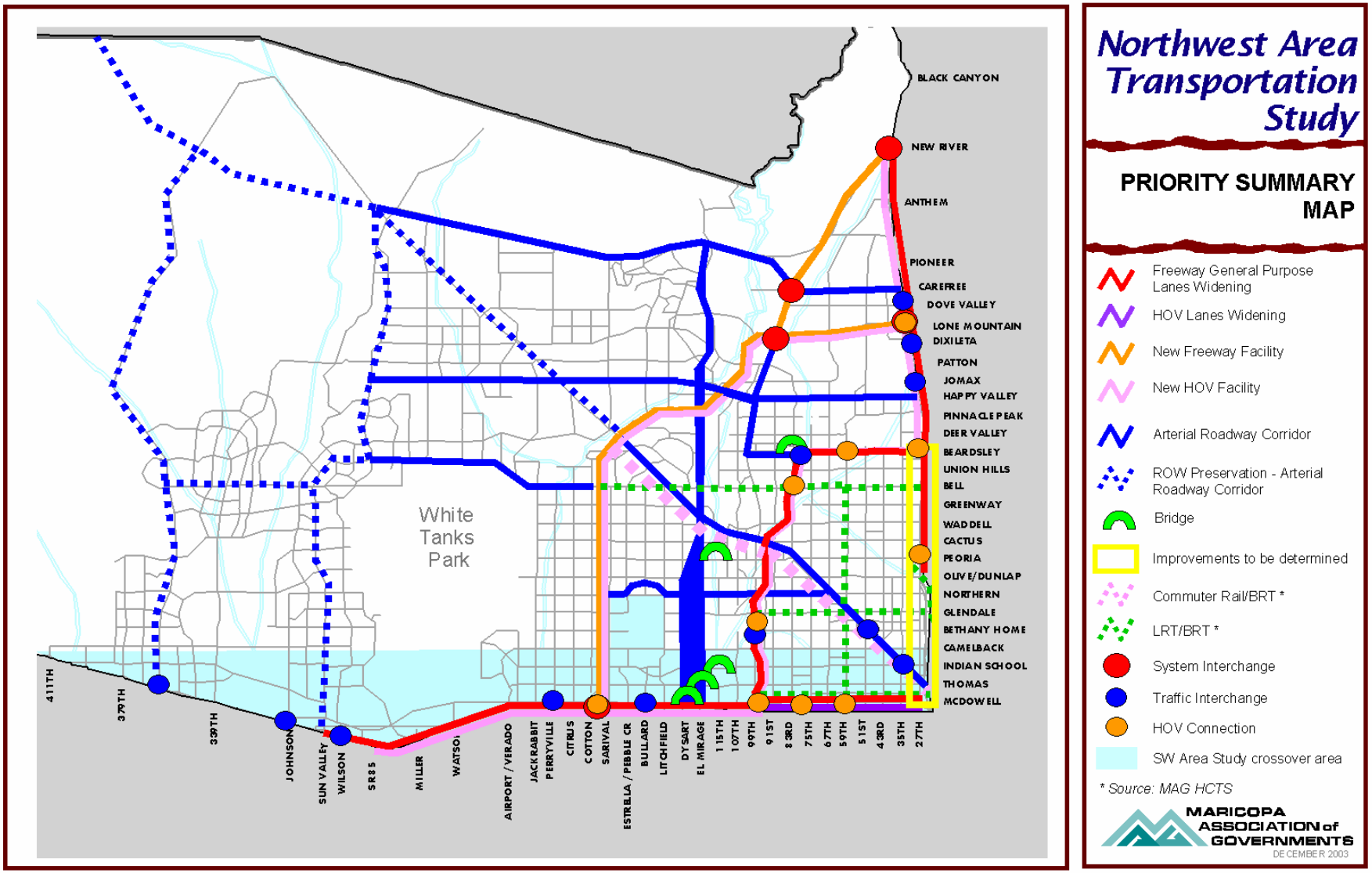
	All Priority Projects	Lanes Added (each direction)	Total lanes (each direction)	Project Cost in millions (Cost estimates will be refined in RTP)		Totals
	Freeways (includes Freeway Management System)					
I-10	I-10 General Purpose Lanes Widening (I-17 to Loop 101)	1	5		$540	
	I-10 HOV Lanes Widening (I-17 to Loop 101)	1	2		$194	
	I-10 General Purpose Lanes Widening (Loop 101 to Sun Valley Parkway)	3	5		$552	
	Bullard TI				$16	
	Perryville TI				$16	
	Wilson TI				$16	
	Johnson TI				$16	
	CANAMEX TI (355th Avenue)				$35	
	I-10 HOV Lanes Widening (Loop 101 to SR 85)	1	1		$126	
	79th Ave HOV ramps (west)				$8	
	59th Ave HOV ramps				$15	
		Subtotal I-10			**$1,534**	
I-17	I-17 General Purpose Lanes north of Loop 101 to Loop 303	3	5		$156	
	I-17 General Purpose Lanes north of Loop 303 to Black Canyon City	2	4		$133	
	Dove Valley TI				$16	
	Jomax TI				$16	
	Peoria Avenue HOV ramps				$16	
	I-17 HOV Lanes north of Loop 101 to New River	1	1		$102	
	I-17 General Purpose Lanes south of Loop 101, north of Dunlap	1	4		$280	
	I-17 south of Loop 101 to I-10	TBD	TBD		$1,000	
		Subtotal I-17			**$1,719**	
Loop 101	Loop 101 General Purpose Lanes widening	1	4		$176	
	Beardsley ramps				$8	
	Bethany Home TI				$16	
	Loop 101 HOV lanes	1	1		$132	
	Loop 101 HOV Connectors to I-10				$35	
	Loop 101 HOV Connectors to I-17				$35	
	59th Ave HOV ramps				$15	
	Bell Road HOV ramps				$15	
	Maryland HOV ramps				$15	
		Subtotal Loop 101			**$447**	
Loop 303	Loop 303 south of US 60	4	4		$495	
	System TI at I-10				$54	
	Right of way preservation north of US 60				$180	
	Loop 303 north of US 60	4	4		$611	
	System TI at I-17 (at Lone Mountain), including Ties at 43rd Ave., Dixileta and Dove Valley				$90	
	Loop 303 HOV lanes	1	1		$216	
	HOV Connector at I-17				$35	
	HOV Connector at I-10				$35	
	Loop 303 - New River Extension right of way preservation				$142	
	Loop 303 - New River Extension	3	3		$238	
	System TI at Loop 303 (New River extension)				$70	
	System TI at I-17 (at New River)				$70	
	System TI at Carefree Hwy				$50	
		Subtotal Loop 303			**$2,286**	
				Freeway Total		**$5,986**

Table 36: Priority Summary (continued)

Expressways/Superstreets/Parkways/Arterial Roadway Corridors (ARCS) (including $100,000/mile for ITS) - **Potential Freeway**					
Carefree Highway (US 60 to Loop 303 in freeway right of way)	1	2		$468	
Expressways/Superstreets/Parkways/Arterial Roadway Corridors (ARCS) (including $100,000/mile for ITS)					
Grand Avenue s/o Loop 101(*additional grade separations*)				$100	
Grand Avenue - Loop 101 to Loop 303	1	3		$134	
Grand Avenue (Loop 303 to Sir 74) right of way preservation		1		$67	
Northern Avenue Superstreet	2	4		$256	
El Mirage/Dysart Roads	1 to 2	3		$126	
Carefree Parkway (Loop 303 New River Extension - I-17)	2	3		$39	
Loop 101/Loop 303 Connector Expressway	1	3		$25	
Sun Valley Parkway	1	3		$124	
Sun Valley Parkway extension north of Bell Road	3	3		$62	
Bell Road (Sun Valley to Loop 303)	2	3		$54	
Happy Valley/Jomax Roads	1 to 3	3		$144	
CANAMEX (row preservation)	2	2		$230	
New or widened river bridges at Peoria, Thomas, Indian School, and McDowell Roads				$45	
Wickenburg Bypass	2	2		$220	
			ESPA Total		**$2,094**
High Capacity Transit - from High Capacity Transit Study (HCTS)					
Grand Avenue - (Commuter Rail/BRT) *(HCTS mid and long term)*				$739	
Glendale Avenue (LRT/BRT) *(HCTS near and mid term)*				$430	
I-10 West (LRT) (*HCTS near term*)				$400	
Metrocenter/I-17 (LRT) (*HCTS near term*)				$340	
59th Avenue - I-10 (LRT/BRT) (*from HCTS mid and long term*)				$518	
Bell Road - I-17 to Loop 303 (LRT/BRT) (*from HCTS near and long term*)				$371	
			HCT Total		**$2,798**
Fixed Route Transit - from Regional Transit Systems Study (RTSS)					
Buses				$132	
Park and Ride Lots				$83	
Stations				$14	
			Fixed Route Total		**$229**
Non-motorized (Bicycle/Pedestrian)			**Non Motorized Total**	$200	**$200**
Other Items			**Other Total**		
Arterial grid/scalloped street program/safety				$225	**$225**
Program Total					**$11,532**

Notes: Auxiliary lanes are not counted in one-way total. Costs and phasing are preliminary and subject to change in the final RTP.

Figure 66: Priority Summary Map



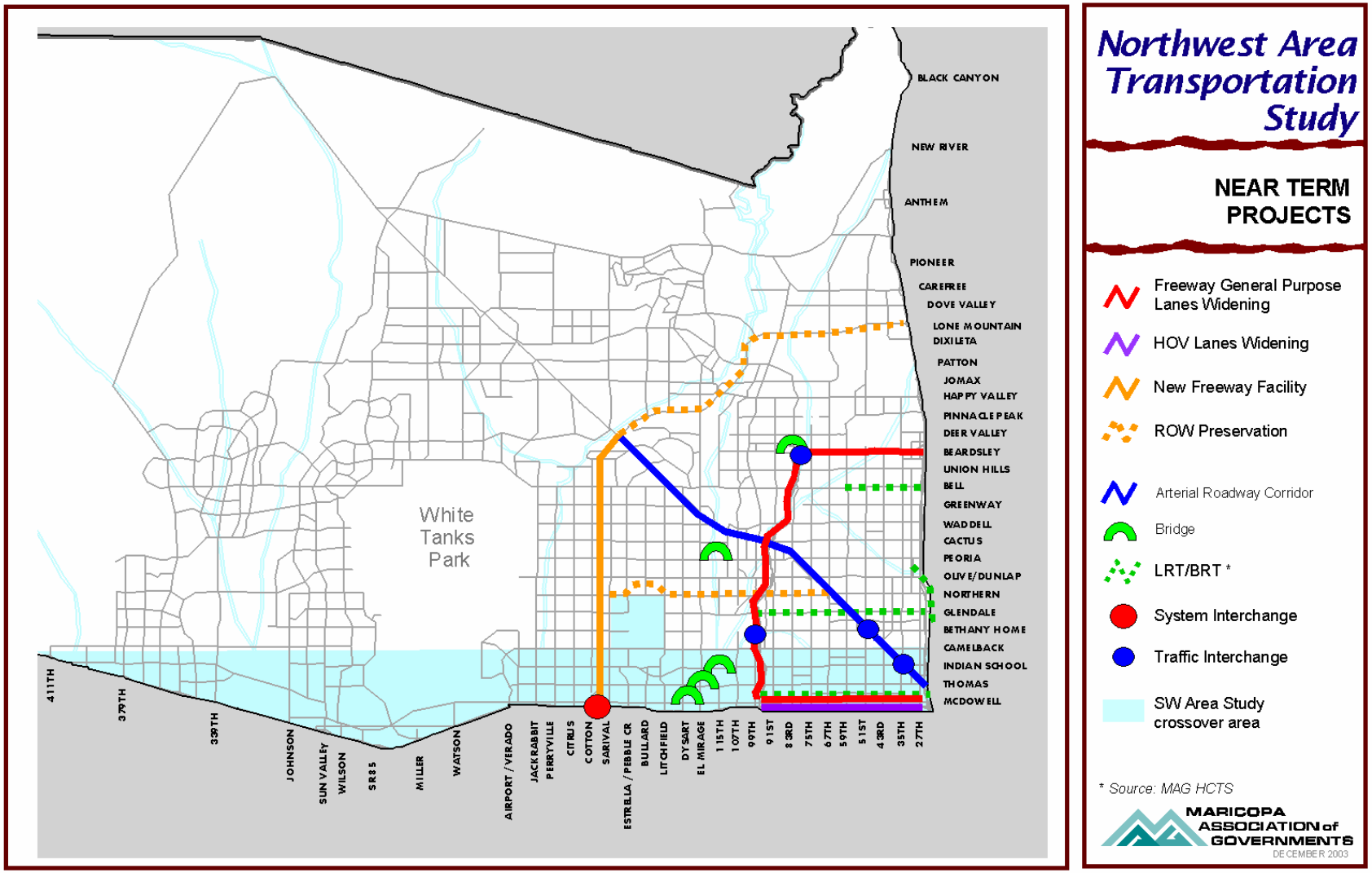
Alignments and other major design elements for new freeways, highways, and arterials are subject to change following the completion of needed location/design concept studies. Local plans affecting the arterial system are subject to change, particularly in rapidly-growing areas.

Table 37: Near Term Projects

Near Term Projects	Lanes Added (each direction)	Total Lanes (each direction)	Project Cost in millions (Cost estimates will be refined in RTP)	NWATS Short Term Total (millions)
Freeways (includes Freeway Management System)				
I-10				
I-10 General Purpose Lanes Widening (I-17 to Loop 101)	1	5	$540	
79th Ave HOV ramps (west)			$8	
I-10 HOV Lanes Widening (I-17 to Loop 101)	1	2	$194	
Loop 101				
Loop 101 General Purpose Lanes widening	1	4	$176	
Bethany Home TI			$16	
Beardsley TI			$8	
Loop 303				
Loop 303 south of US 60	4	4	$495	
System TI at I-10			$70	
Loop 303 north of US 60 preservation of right-of-way			$180	
			Subtotal	**$1,687**
Expressways/Superstreets/Parkways/Arterial Roadway Corridors (ARCS) (including $100,000/mile for ITS)				
Grand Avenue s/o Loop 101(*additional grade separations*)				
Indian School TI			$50	
Bethany Home TI			$50	
Grand Avenue - Loop 101 to Loop 303	1	3	$134	
w/widened river bridges at Peoria, Thomas, Indian School, and McDowell Roads			$45	
Northern Avenue preservation of right-of-way			$40	
			Subtotal	**$319**
High Capacity Transit - from High Capacity Transit Study (HCTS)				
I-10 West LRT (*HCTS near term*)			$400	
Glendale Avenue LRT *(HCTS near term)*			$430	
Metrocenter/I-17 LRT (*HCTS near term*)			$340	
Bell Road - 59th Avenue to I-17 *(HCTS near term)*			$114	
			Subtotal	**$1,284**
Fixed Route Transit - from Regional Transit Systems Study (RTSS)				
Buses			$72	
Park and Ride Lots			$60	
Stations			$14	
			Subtotal	**$146**
Nonmotorized (Bicycle/Pedestrian)			$60	
			Subtotal	**$60**
Other Items				
Arterial grid/scalloped street program/safety			$75	
			Subtotal	**$75**
Total Near Term				**$3,511**

Notes: Auxiliary lanes are not counted in one-way total. Costs and phasing are preliminary and subject to change in the final RTP.

Figure 67: Near Term Projects



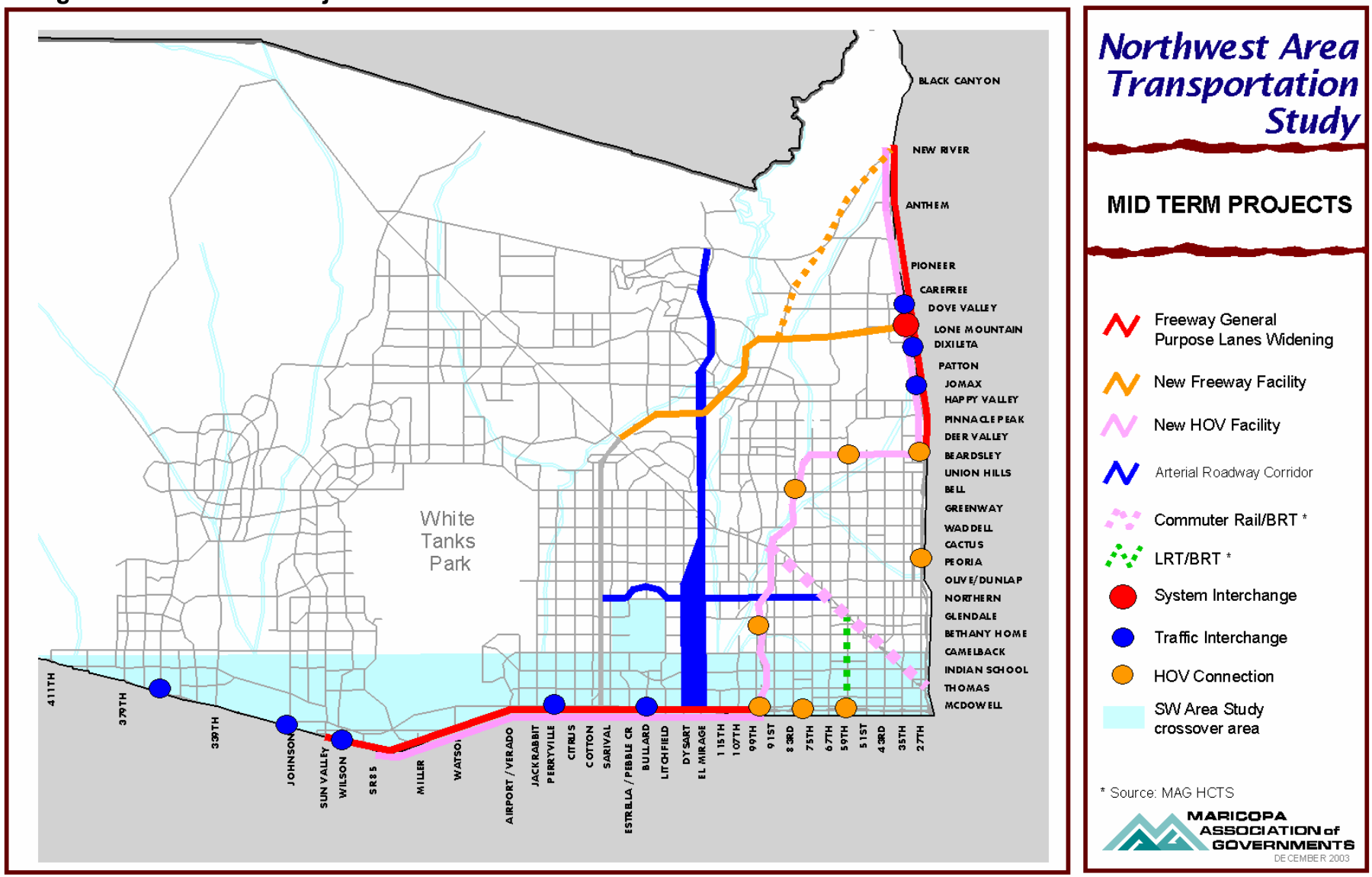
Alignments and other major design elements for new freeways, highways, and arterials are subject to change following the completion of needed location/design concept studies. Local plans affecting the arterial system are subject to change, particularly in rapidly-growing areas.

Table 38: Mid Term Projects

Mid Term Projects	Lanes Added (each direction)	Total Lanes (each direction)	Project Cost in millions (Cost estimates will be refined in RTP)	NWATS Mid Term Total (millions)
Freeways (includes freeway management system)				
I-10				
I-10 General Purpose Lanes Widening (Loop 101 to Sun Valley Parkway)	3	5	$552	
Bullard TI			$16	
Perryville TI			$16	
Johnson TI			$16	
Wilson TI			$16	
CANAMEX TI (355th Avenue)			$35	
I-10 HOV Lanes Widening (Loop 101 to SR 85)	1	1	$126	
59th Avenue HOV ramps			$15	
Loop 101				
Loop 101 HOV lanes	1	1	$132	
Loop 101 HOV Connectors to I-10			$35	
Loop 101 HOV Connectors to I-17			$35	
59th Ave HOV ramps			$15	
Bell Road HOV ramps			$15	
Maryland HOV ramps			$15	
I-17				
I-17 General Purpose Lanes north of Loop 101 to Loop 303	3	5	$156	
I-17 General Purpose Lanes north of Loop 303 to New River	2	4	$133	
Dove Valley TI			$16	
Jomax TI			$16	
Peoria Avenue HOV ramps			$16	
I-17 HOV Lanes north of Loop 101 to New River	1	1	$102	
Loop 303				
Loop 303 north of US 60	4	4	$611	
m TI at I-17 (at Lone Mountain including TI at 43rd Ave and partial TI at Dixileta)			$90	
Loop 303 - New River Extension - preservation of right-of-way			$142	
			Subtotal	**$2,321**
Expressways/Superstreets/Parkways/Arterial Roadway Corridors (ARCS) (including $100,000/mile for ITS)				
Northern Avenue Superstreet	2	4	$216	
El Mirage/Dysart Roads	1 to 2	3	$126	
			Subtotal	**$342**
High Capacity Transit - from High Capacity Transit Study (HCTS)				
Grand Avenue - Phase 1 (Commuter Rail/BRT) *(HCTS mid term)*			$293	
59th Avenue LRT/BRT - Glendale Ave to I-10 West *(HCTS mid term)*			$216	
			Subtotal	**$509**
Fixed Route Transit - from Regional Transit Systems Study (RTSS)				
Buses			$60	
Park and Ride Lots			$23	
			Subtotal	**$83**
Nonmotorized (Bicycle/Pedestrian)			Subtotal $40	**$40**
Other Items				
Arterial grid/scalloped street program/safety			$75	
			Subtotal $75	**$75**
Total Mid Term				**$3,370**

Notes: Auxiliary lanes are not counted in one-way total. Costs and phasing are preliminary and subject to change in the final RTP.

Figure 68: Midterm Projects



Alignments and other major design elements for new freeways, highways, and arterials are subject to change following the completion of needed location/design concept studies. Local plans affecting the arterial system are subject to change, particularly in rapidly-growing areas.

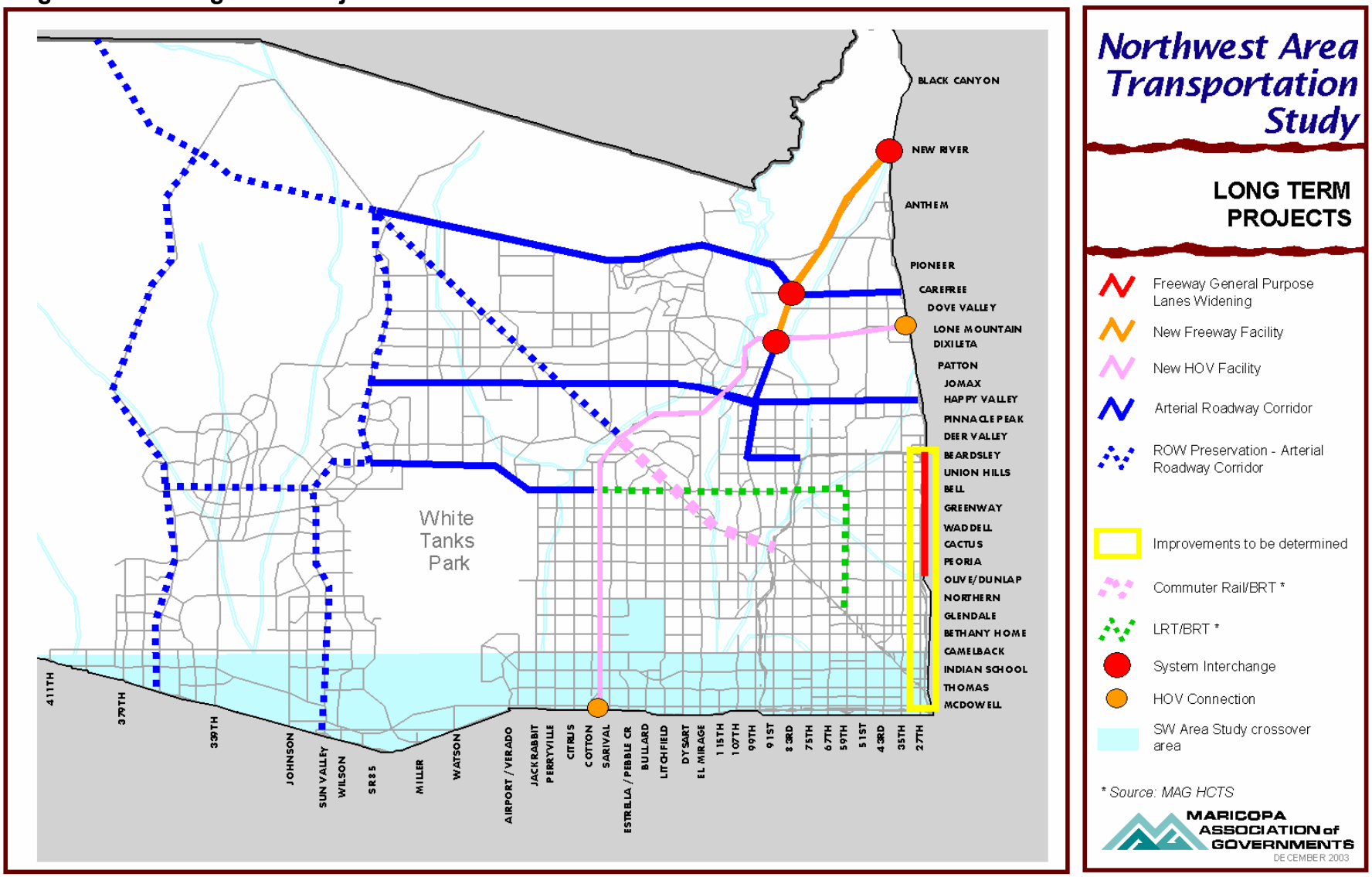
Table 39: Long Term Projects

Long Term Projects	Lanes Added (each direction)	Total Lanes (each direction)	Project Cost in millions (Cost estimates will be refined in RTP)	NWATS Long Term Total (millions)
Freeways (includes FMS)				
Loop 303				
Loop 303 HOV lanes	1	1	$216	
HOV Connector at I-17			$35	
HOV Connector at I-10			$35	
Loop 303 - New River Extension	3	3	$238	
System TI at Loop 303			$70	
System TI at I-17 (at New River)			$70	
System TI at Carefree Hwy			$50	
I-17				
I-17 General Purpose Lanes south of Loop 101, north of Peoria	1	4	$280	
I-17 south of Loop 101 to I-10	TBD	TBD	$1,000	
			Subtotal	**$1,994**
Expressways/Superstreets/Parkways/Arterial Roadway Corridors (ARCS) (incl. $100,000/mile for ITS) - **Potential Freeway**				
Carefree Highway (US 60 to Loop 303 New River Extension)*	1	2	$468	
Expressways/Superstreets/Parkways/Arterial Roadway Corridors (ARCS) (including $100,000/mile for ITS)				
Carefree Parkway (Loop 303 New River Extension - I-17)	2	3	$39	
Loop 101/Loop 303 Connector Expressway	1	3	$25	
Sun Valley Parkway	1	3	$124	
Grand Avenue (Loop 303 - SR 74) right of way preservation	1	1	$67	
Sun Valley Parkway extension north of Bell Road	3	3	$62	
Bell Road (Sun Valley Extension to Loop 303)	2	3	$54	
Happy Valley/Jomax Roads	1 to 3	3	$144	
CANAMEX (right-of-way preservation)*	2	2	$230	
Wickenburg Bypass (west of CANAMEX)*	2	2	$102	
Wickenburg Bypass (east of CANAMEX)	2	2	$118	
			Subtotal	**$1,433**
High Capacity Transit - from High Capacity Transit Study (HCTS)				
59th Avenue LRT/BRT - Bell Road to Glendale Avenue *(HCTS long term)*			$302	
Bell Road - 59th Avenue to Loop 303 (LRT/BRT) (*HCTS long term*)			$257	
Grand Avenue - Phase 3 *(HCTP long term)*			$446	
			Subtotal	**$1,005**
Nonmotorized (Bicycle/Pedestrian)			$100	
			Subtotal	**$100**
Other Items				
Arterial grid/scalloped street program/safety minimum allocation			$75	
			Subtotal	**$75**
Total Long Term				**$4,607**

* Assumes freeway width right-of-way

Notes: Auxiliary lanes are not counted in one-way total. Costs and phasing are preliminary and subject to change in the final RTP.

Figure 69: Long Term Projects



Alignments and other major design elements for new freeways, highways, and arterials are subject to change following the completion of needed location/design concept studies. Local plans affecting the arterial system are subject to change, particularly in rapidly-growing areas.

8.1.11 Other Plan Considerations

Other items to be considered include policy matters such as eliminating scalloped streets, protecting and expanding the arterial grid and preserving right of way which should be viewed as near term items given the implications they have on future system development. These will require coordination among MAG members and possibly modification to local regulations.

Funding allocation will need to be addressed as a line item in any future revenue program. Ideally, right-of-way preservation and scalloped streets would have a dedicated source of funding that could be accessed when a critical regional need arises (similar to the funding for the Red Letter process in the Regional Area Road Fund program.) The amount proposed in this report is $50 million for each of the three time periods.

Arterial grid expansion is intended to be more of a prioritization process within the implementation program that would offer higher ranking to projects that help close regional arterial gaps or mitigate regional arterial deficiencies.